

Title (en)

Apparatus and method for providing fluid for immersion lithography

Title (de)

Vorrichtung und Verfahren zur Bereitstellung eines Fluids für Immersionslithographie

Title (fr)

Appareil et procédé de fourniture de fluide pour lithographie par immersion

Publication

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Application

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Abstract (en)

[origin: WO2005024517A2] Embodiments of the present invention are directed to a system and a method of controlling the fluid flow and pressure to provide stable conditions for immersion lithography. A fluid is provided in a space between the lens and the substrate during the immersion lithography process. Fluid is supplied to the space and is recovered from the space through a porous member in fluidic communication with the space. Maintaining the pressure in the porous member under the bubble point of the porous member can eliminate noise created by mixing air with the fluid during fluid recovery. In one embodiment, the method comprises drawing the fluid from the space via a recovery flow line through a porous member; and maintaining a pressure of the fluid in the porous member below a bubble point of the porous member during drawing of the fluid from the space.

IPC 8 full level

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IPC 8 main group level

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CPC (source: EP KR US)

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**US 2004022915 W 20040716**; CN 200810092257 A 20040716; EP 04778426 A 20040716; EP 15158998 A 20040716; EP 16207513 A 20040716; EP 17156010 A 20040716; HK 06112925 A 20061124; HK 16102215 A 20160226; JP 2006525323 A 20040716; JP 2008242895 A 20080922; JP 2010255404 A 20101115; JP 2012015910 A 20120127; JP 2013186437 A 20130909; JP 2014148358 A 20140718; JP 2015166994 A 20150826; JP 2016200712 A 20161012; JP 2017069846 A 20170331; JP 2017224256 A 20171122; KR 20067003381 A 20040716; KR 20117019694 A 20040716; KR 20117024246 A 20040716; KR 20127020883 A 20040716; KR 20137016869 A 20040716; KR 20147005373 A 20040716; KR 20147029538 A 20040716; KR 20177015903 A 20040716; TW 100146764 A 20040903; TW 101118936 A 20040903; TW 103140760 A 20040903; TW 105134272 A 20040903; TW 107110311 A 20040903; TW 93126654 A 20040903; US 201313944281 A 20130717; US 201414519573 A 20141021; US 201615394016 A 20161229; US 201715786758 A 20171018; US 201916238887 A 20190103; US 36283306 A 20060228; US 46124309 A 20090805; US 79023307 A 20070424